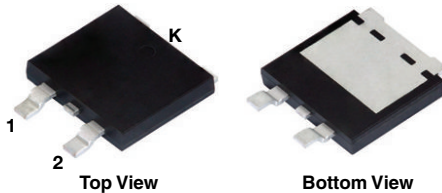
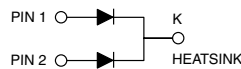


Dual Trench MOS Barrier Schottky Rectifier

 Ultra Low $V_F = 0.29\text{ V}$ at $I_F = 5\text{ A}$
**TMBS® eSMP® Series
TO-263AC (SMPD)**

V30DL50C

FEATURES

- Trench MOS Schottky technology
- Very low profile - typical height of 1.7 mm
- Ideal for automated placement
- Low forward voltage drop, low power losses
- High efficiency operation
- AEC-Q101 qualified
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


**RoHS
COMPLIANT
HALOGEN
FREE**
TYPICAL APPLICATIONS

For use in high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection.

PRIMARY CHARACTERISTICS

| | |
|------------------------------|---------------------|
| $I_{F(AV)}$ | 2 x 15 A |
| V_{RRM} | 50 V |
| I_{FSM} | 300 A |
| V_F at $I_F = 15\text{ A}$ | 0.42 V |
| T_J max. | 150 °C |
| Package | TO-263AC (SMPD) |
| Diode variations | Dual common cathode |

MECHANICAL DATA
Case: TO-263AC (SMPD)

 Molding compound meets UL 94 V-0 flammability rating
 Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: As marked

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)

| PARAMETER | SYMBOL | V30DL50C | UNIT |
|---|----------------|-------------|------|
| Maximum repetitive peak reverse voltage | V_{RRM} | 50 | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | per device | 30 |
| | | per diode | 15 |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 300 | A |
| Operating junction and storage temperature range | T_J, T_{STG} | -40 to +150 | °C |



| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | |
|--|------------------------|-------------------------|-------------------------------|------|------|----|
| PARAMETER | TEST CONDITIONS | SYMBOL | TYP. | MAX. | UNIT | |
| Instantaneous forward voltage per diode | I _F = 5 A | T _A = 25 °C | V _F ⁽¹⁾ | 0.39 | - | V |
| | I _F = 7.5 A | | | 0.42 | - | |
| | I _F = 15 A | | | 0.49 | 0.57 | |
| | I _F = 5 A | T _A = 125 °C | | 0.29 | - | |
| | I _F = 7.5 A | | | 0.33 | - | |
| | I _F = 15 A | | | 0.42 | 0.50 | |
| Reverse current per diode | V _R = 50 V | T _A = 25 °C | I _R ⁽²⁾ | - | 1800 | μA |
| | | T _A = 125 °C | 25 | 60 | mA | |
| Typical junction capacitance | 4.0 V, 1 MHz | T _A = 25 °C | C _J | 2800 | - | pF |

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | |
|---|------------|------------------------------------|------|------|
| PARAMETER | SYMBOL | V30DL50C | UNIT | |
| Typical thermal resistance | per diode | R _{θJC} | 1.7 | °C/W |
| | per device | | 0.9 | |
| | per device | R _{θJA} ⁽¹⁾⁽²⁾ | 45 | |

Notes

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient: dP_D/dT_J < 1/R_{θJA}
- (2) Free air, without heatsink

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|---------------|-----------------|--------------|---------------|------------------------------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-263AC (SMPD) | V30DL50C-M3/I | 0.55 | I | 2000/reel | 13" diameter plastic tape and reel |
| TO-263AC (SMPD) ⁽¹⁾ | V30DL50CHM3/I | 0.55 | I | 2000/reel | 13" diameter plastic tape and reel |

Note

- (1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

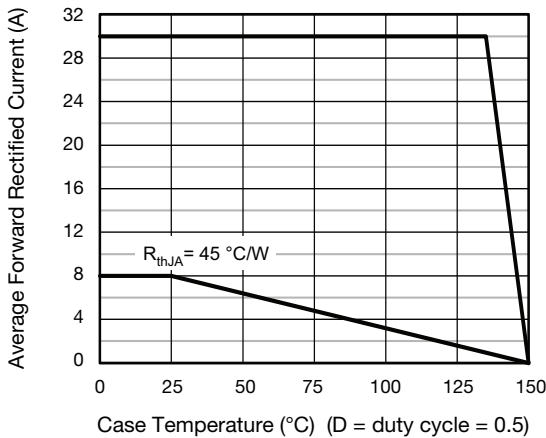


Fig. 1 - Forward Current Derating Curve

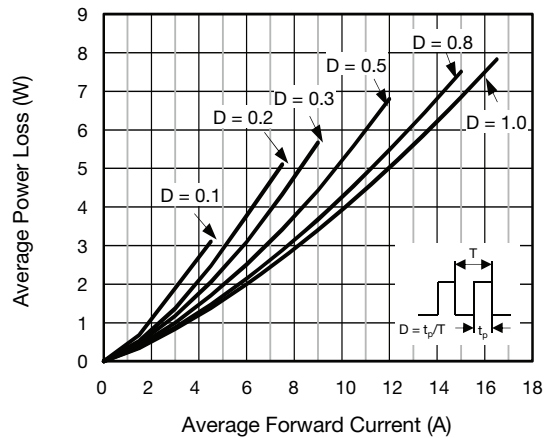


Fig. 2 - Forward Power Loss Characteristics Per Diode

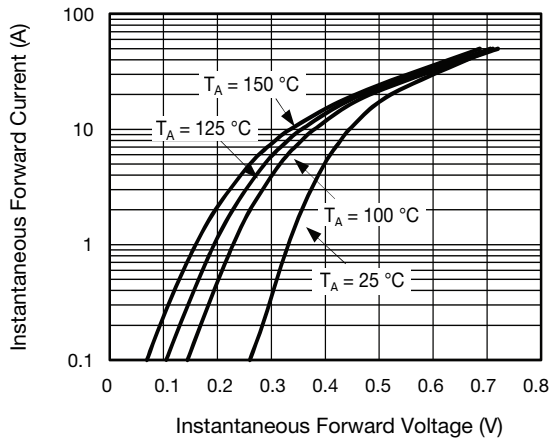


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

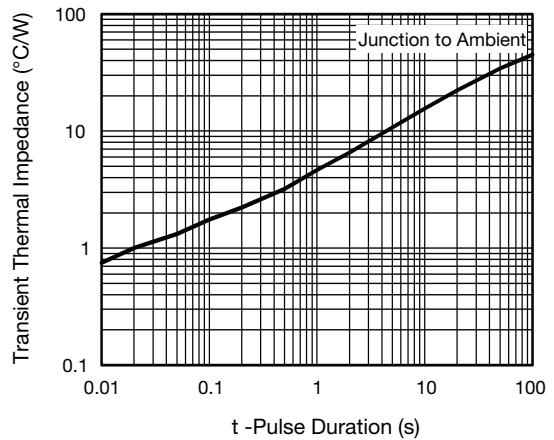


Fig. 6 - Typical Transient Thermal Impedance Per Device

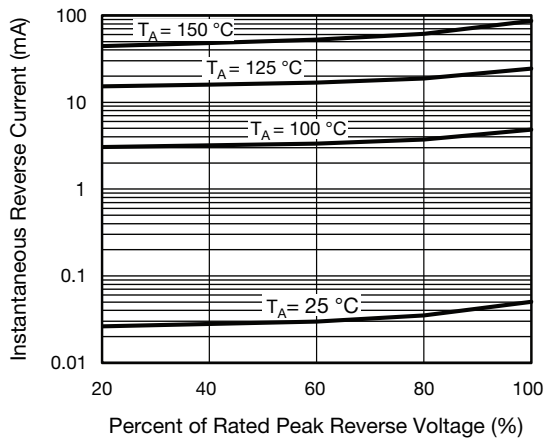


Fig. 4 - Typical Reverse Characteristics Per Diode

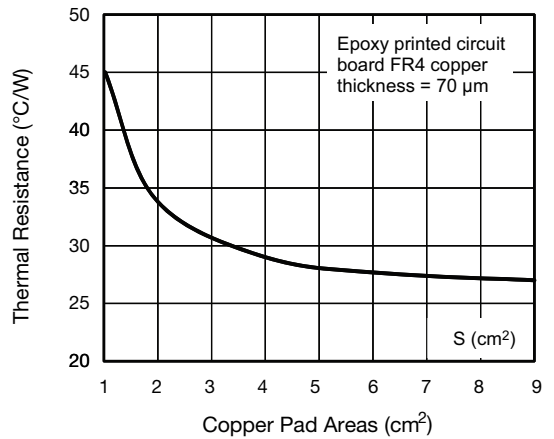


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

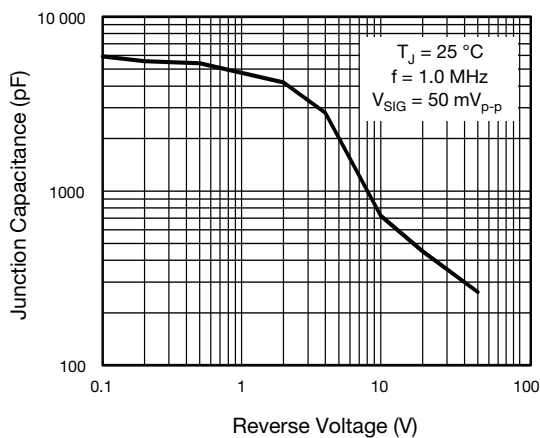
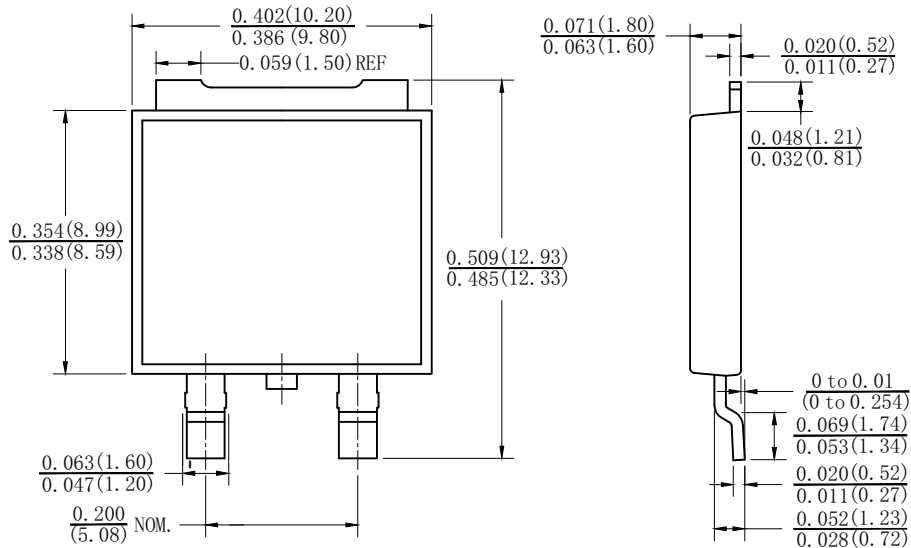


Fig. 5 - Typical Junction Capacitance Per Diode

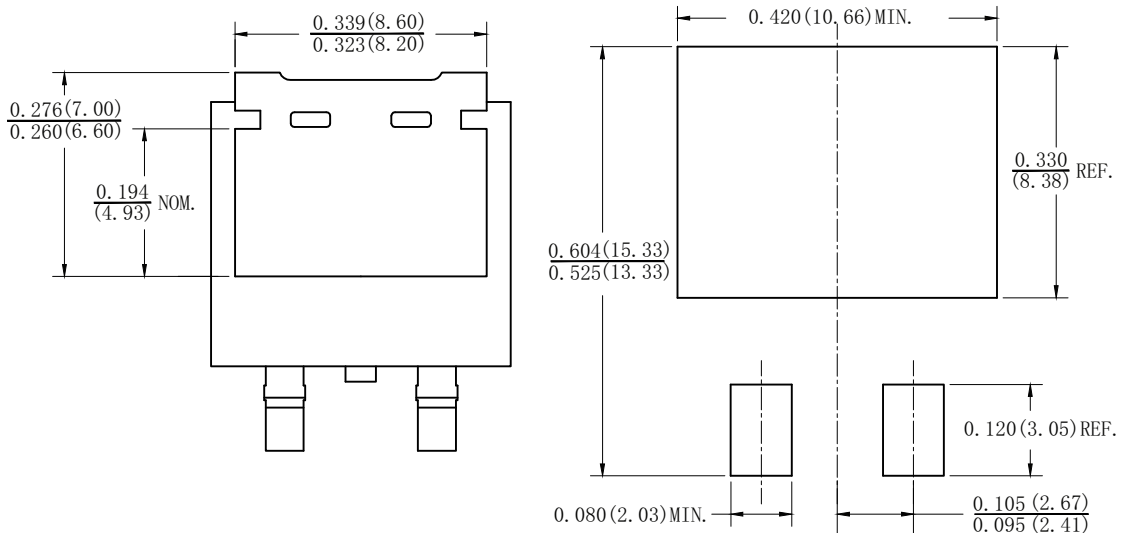


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-263AC (SMPD)



Mounting Pad Layout





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